The Mediating Role of Social Intelligence in the Relations of Emotional Regulation Dimensions and Empathy to Direct and Indirect Aggression

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ABSTRACT

Pathways linking dimensions of emotion regulation (impulsivity, inhibitory control and control of anger), empathy and social intelligence to direct aggression and indirect aggression were examined among 344 school children in the age range of 11-12. While direct effects of impulsivity (reversed) and inhibitory control on aggression were found to be negative, social intelligence completely mediated the effect of control of anger on direct and indirect aggression, suggesting different functions of the various dimensions of emotion regulation on social information processing. Social intelligence was found to negatively and partially mediate the effects of empathy on aggression. The direct effects of empathy on aggression were found to be negative, whereas empathy's indirect effects through social intelligence on aggression were found to be positive. The opposing direct and indirect effects can be attributed to influences from different facets of empathy.

摘要

本研究審視情緒調節維度(衝動性，抑控，憤怒控制)，移情力及社交智力三個因素與直接侵略性和間接侵略性，所構成的關系聯接路徑。研究對象是 344 名年齡 11-12 歲的學童。結果發現衝動性(反向)及抑控對侵略性有著直接而反向的影響，而社交智力卻完全地調處憤怒控制對直接和間接侵略性的影響。 這結果顯示情緒調節的各種維度對社交資訊處理，是起著不同的作用的。另一方面，又發現社交智力是局部而反向地調處移情力對侵略性的影響。移情力對侵略性的直接影響是反向的，而移情力透過社交智力對侵略性的間接影響卻是正向的。這些互相抗衡的直接和間接影響，都是由于移情力的不同部份所引致。

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CHAPTER 1. INTRODUCTION

There are many definitions of aggression, but the basic criterion is that *"for a behavior to be regarded as aggressive, the aggressor must have the intention to harm and the victim must feel hurt."* (Underwood, 2003 p. 15). To understand its causes, aggression has been studied from different perspectives. Aggression takes the form of either direct or indirect aggression, with the latter requiring higher levels of social skills (Kaukiainen, Bjorkqvist, Lagerspetz, Osterman, Sallmivalli, Rothberg & Ahlbom, 1999). Research findings suggest that socio-emotional factors play a key role in influencing aggression. Emotion regulation, empathy and social intelligence have all been found to be associated with children's aggressive behaviors (Wilton, Craig & Pepler, 2000; Strayer and Roberts, 2004; Kaukiainen et al.,1999).

Emotion regulation is the successful management of emotional arousal that is required for secure social functioning (Rydell, Berlin & Bohlin, 2003). Maladaptive emotion regulation is a risk factor for chronic aggression (Wilton, Craig & Pepler, 2000). Examined in the present study are three dimensions of emotional regulation, control of anger, inhibitory control, and impulsivity.

Empathy consists of both cognitive and affective components. Cognitive skill distinguishes affective cues and helps individuals to assume the perspective and role of another person. Affective skill is the emotional responsiveness and the affective ability to experience others' emotions. Empathy was found to be negatively correlated with aggression and anger, and positively related to prosocial behavior

(Strayer & Roberts, 2004). However, studies have rarely looked at the effects due to different components of empathy.

Social intelligence is one's ability to accomplish relevant objectives in specific social settings (Ford & Tisak, 1983). Inaccuracies such as attributional biases and deficits in social informational processing are found in highly physically (directly) aggressive children. In contrast, social intelligence was found to be correlated positively and significantly with indirect aggression. Indirect aggression often requires relatively sophisticated social skills (Kaukiainen, Bjorkqvist, Lagerspetz, Osterman, Sallmivalli, Rothberg & Ahlbom, 1999).

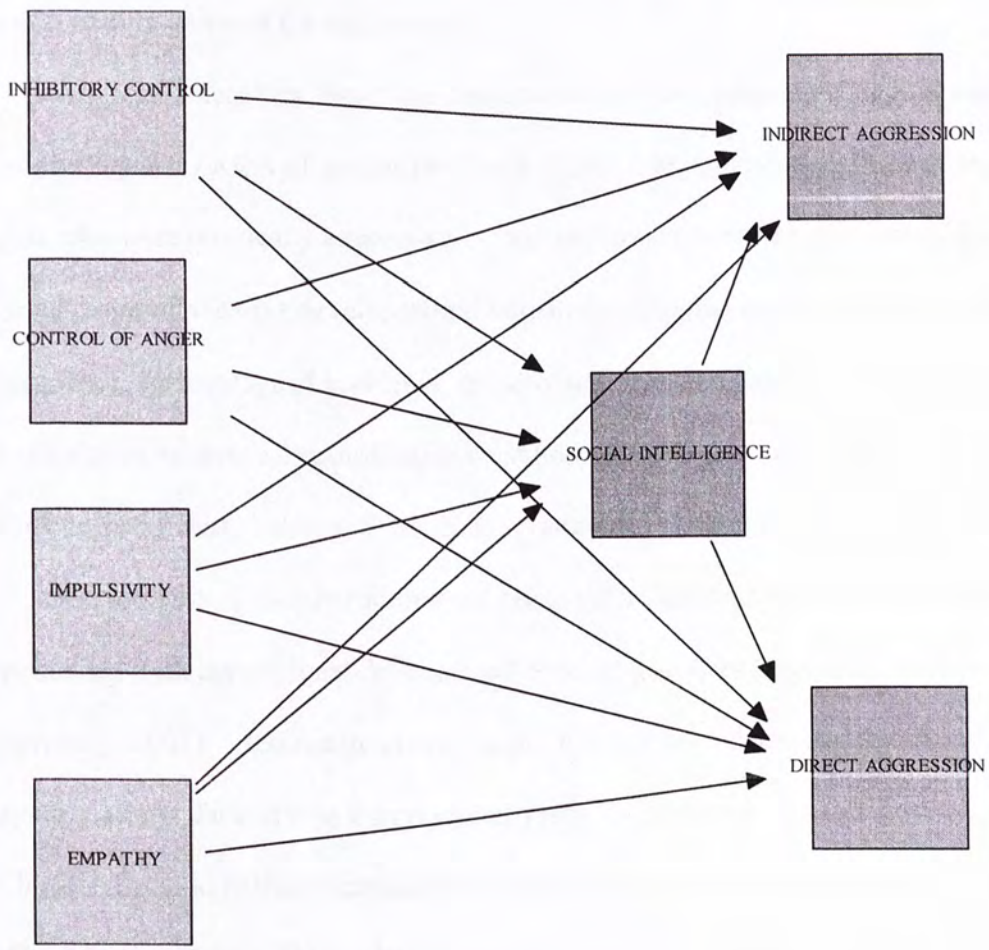
There is evidence to suggest that the effect of emotion regulation on aggression is mediated by social intelligence. The skill of regulating emotions might affect what is read and understood about the situation. Poor emotion regulation would affect children's assessment of the social context from multiple perspectives and consequently the selection of goals and response strategies to a social situation (Saarni, 1999).

In view of its impact on child development, much research has been directed to studying aggression, in order to prevent its occurrence and mitigate its damage. However, the linkages between the various socio-emotional factors and their effect on aggression have not been widely explored. Based on empirical research evidence cited above, a hypothesized path model of emotion regulation and empathy on aggression, with social intelligence as the mediator, is proposed (Figure 1). Emotion regulation consists of three dimensions, inhibitory control, ability to control feelings of anger and (reversed items) tendency to behave impulsively, while

aggression is separated into two variables, direct aggression and indirect aggression. The relation between aggression and the emotional factors, as well as the mediating role of social intelligence, will be elaborated further in the sections to follow.

Figure 1

The Hypothesized Path Model of Emotion Regulation (Inhibitory Control, Control of Anger, and Impulsivity) and Empathy on Aggression with Social Intelligence as the Mediator



Direct Aggression and Indirect Aggression

Aggression may be classified into direct (overt) aggression and indirect (covert, relational) aggression. Direct (overt) aggression usually occurs when victims are harmed through physical or direct verbal aggression. Physical aggression is easily detected and has been widely studied. Indirect, covert or relational aggression (Bjorkqvist, Lagerspetz & Kaukiainen, 1992; Crick & Grotpeter, 1996; Crick, Nelson, Morales, Cullerton-Sen, Casas & Hickman, 2001) involves aggression that is more complicated, subtle and covert in nature. Victims are controlled by the social manipulation of the aggressors.

Aggressiveness was found to be associated with dropping out of school and criminality in a review of studies (Parker & Asher, 1987). In a longitudinal study, girls who were physically aggressive in their childhood were at higher risks for a broad range of negative developmental outcomes: dropping out of school, adolescent pregnancy, gynecological problems, sexually transmitted diseases, teenage motherhood, obstetrical complications and unresponsive parenting (Serbin, Cooperman, Peters, Lehoux, Stack & Schwartzmen, 1998).

Relationally aggressive adolescent girls tend to have externalizing problems associated with oppositional defiance and conduct disorders (Prinstein, Boergers, & Vernberg, 2001). Indirect/relational aggression has been demonstrated in children as early as age three during the preschool years (Crick, Casas & Ku, 1999). Children respond to the immediate situations but not events that happened in the past (Crick et al., 2001). Their relational aggressive acts are also direct and simple.

For example, telling someone that they will not be her/his friends unless s/he gives them some cookies.

Children in middle childhood (Crick et al., 2001) have more refined social skills, and complex cognitive and linguistics abilities. They tend to be more covert, less confrontational and use the interaction of the peer group in their relational aggression. They might spread around rumors, exclude the victimized child intentionally, or become involved in covert actions that have the intention to harm. In addition, their response to their victimized peers involves the past and the immediate events. For example, the relational aggressor may exclude someone from a party, because s/he was not invited to a party last month.

Relational aggression gets more complicated when children reach adolescence (Crick et al., 2001). As opposite-sex friendship becomes common, relational aggression may involve both male and female peers. However, relational aggression in younger age groups occurs in same sex groups. In adolescence, relational aggression involves both direct and indirect manipulations of social relationships. In a study (Bjorkqvist, Lagerspetz & Kaukiainen, 1992) on two different cohorts of schoolchildren at 8 years old and 11 years old, it was found that indirect aggressive strategies were not fully developed in 8-year old children, but were very prominent in 11-year olds.

The bulk of research evidence suggests that girls engage more than boys do in indirect aggression (Olweus, 1978 as cited in Crick et al., 2001; Morita, Soeda, Soeda & Taki, 1999) and that boys engage more than girls do in direct aggression (Coie & Dodge, 1998; Hyde, 1984; Knight Fabes & Higgins, 1996). The different

types of aggression employed by boys and girls may be due to their different social cognitions about aggression. From third through sixth grades, girls evaluated indirect aggressions more positively and boys evaluated direct aggressions more positively, when their responses to hypothetical situations were assessed (Crick & Werner, 1998).

The effect of gender in indirect aggression is also found across different cultures and seems to be as "universal" as direct aggression. In Japan, boys are more likely to be involved in direct aggression and girls are more likely to use indirect aggression (Morita, Soeda, Soeda & Taki, 1999). In Norway Olweus (1999) found that girls were more exposed to indirect and subtle aggression than open attacks. Although physical aggression was more common among boys than girls, non-physical aggression was the most common form of aggression in boys. These patterns were also found in Swedish and English students.

The effects of the socio-emotional factors on aggression were measured for both types of aggression in this study, as previous research has suggested that the relationship between these factors and aggression may vary with the type of aggression. The effect of gender on the relationship between the socio-emotional factors and aggression was also examined, as vulnerability towards the two types of aggression was found to differ between the two genders in previous studies.

Emotion Regulation

Eisenberg, Fabes, Guthrie & Reiser (2000) proposed a heuristic model which defines emotion regulation as:

"the process of initiating, maintaining, modulating, or changing the occurrence, intensity, or duration of internal feeling states and emotion-related physiological processes, often in the service of accomplishing one's goals." (Eisenberg, Fabes, Guthrie & Reiser, 2000, p.137).

Control of anger is a facet of emotion regulation where voluntary effort is applied to control one's state of feelings. Aggressive behaviors are suppressed and anguished feelings are diverted elsewhere. Inability to apply regulatory strategies to modulate emotional states has been found to be associated with children's aggression. Anger proneness of juvenile offenders was related to subsequent physical and verbal aggression (Cornell, Peterson & Richards, 1999). Angry individuals used aggression to adjust and improve their emotional states (Bushman, Baumeister & Philips, 2001). Children's anger at ages 4-6 years could predict socially inappropriate behaviors up to 4 years later (Eisenberg, Fabes, Murhy, Shepard, Guthrie, Mazsk, Poulin & Jones, 1999). In a study of minority youths attending 6th grade, anger control skills were found to mediate the effect of perceived parental monitoring practices on aggression (Griffin, Scheier, Botvin, Diaz & Miller, 1999). In another study with 8-year olds, anger regulation was shown to be indirectly related to aggression, with nonverbal anger expression as the mediator (Dearing et al., 2002).

Differentiating emotion-related behavioral regulation from emotion regulation, Eisenberg and Fabes (2000) defined emotion-related behavioral regulation as:

"the process of initiating, maintaining, inhibiting, modulating, or changing the occurrence, form, and duration of behavioral concomitants of emotion, including

observable facial or gestural responses and other behaviors that stem from, or are associated with internal emotion-related psychological or physiological internal states and goals." (Eisenberg, Fabes, Guthrie & Reiser, 2000, p.138).

Inhibitory control is concerned with the regulation of emotion-related behaviors. It is the ability to manage and restrain oneself from inappropriate behaviors. It is regarded as active, voluntary inhibition or modulation of conduct, or self-regulation. The inability to inhibit behavior, control attention and manage cognitive processing is related to externalizing behaviors such as delinquency and aggression (Olson, Schilling & Bates, 1999; Oosterlaan & Sergeant, 1996; Rothbart, Posner & Hershey, 1995). Behavioral inhibition was found to be related to aggression and inattention in a study by Floyd & Kirby (2001) on 3 to 5 year olds with ADHD. Poor inhibitory control and slower inhibitory processes were found to be associated with aggressive behaviors of children of 6 to 12 years old (Oosterlaan & Sergeant, 1996). Children who were more capable of regulating their emotions with various strategies were less likely to demonstrate concurrent and long-term anger when they entered school (Gilliom, Shaw, Beck, Schonberg & Lukon, 2002).

Impulsivity is another facet of emotion regulation concerned with the control of emotion-related behaviors. People high in impulsivity have difficulty in adjusting their behaviors voluntarily. Impulsive children were more likely to have problem behavior, initiating physical fights and aggression (Finch, Saylor & Spirito, 1982; Halperin, Newcorn, Matier & Bedum 1995). In the study by Hays (2000), association between impulsivity and aggression was found with the fifth but not the second graders. It is possible that highly impulsive children are more likely to

demonstrate hostile intent to others and thus are more inclined to use aggression (Wiegner, 1999). In a study testing the effects of social-cognitive mediators on the relation of environmental and emotion regulation factors to children's aggression (Musher-Eizenman, Boxer, Danner, Dubow, Goldstain & Heretick, 2004), it was found that social cognitions about aggression differentially mediated the relation of anger control to aggressive behaviors, with cognitions about direct aggression being the mediator of direct aggression and cognitions about indirect aggression being the mediator of indirect aggression. However, no mediating effects of social cognitions on the relation of impulsivity to aggression were noted. Only direct effects of impulsivity on aggression were observed.

Sarrni (1999) defined emotion regulation as the "ability to manage one's subjective experience of emotion, especially its intensity and duration, and to manage strategically one's expression of emotion in communicative contexts". The term "emotion regulation" used in this study embraces both the emotion regulation process and emotion-related behavioral regulation process as defined by Eisenberg and Fabes' (1992). It refers to the successful management of emotional arousal that is required for secure social functioning (Rydell, Berlin & Bohlin, 2003). A child with poor emotional regulation skills would find it difficult to suppress her/his anguished feelings and manifest these feelings in the form of aggressive behaviors. The child is also considered to have poor emotional regulation skills if s/he cannot inhibit and control impulsive emotion-related behaviors.

Despite the fact that the relation of emotion regulation to child aggression is supported by ample empirical findings, the process of emotion dysregulation leading

to maladaptive behavior is seldom investigated. There are relatively few studies going further to differentiate the effects of different facets of emotion regulation on different forms of aggressive behavior. The present study aims to study the relations of anger control, inhibitory control and impulsivity to indirect and direct aggression. In consideration of the research evidence cited above, it was hypothesized that all three of the emotion regulation dimensions would negatively correlate with both direct and indirect aggression.

Empathy

Another influential emotional factor on aggression is empathy. Below is a statement explaining how empathy is defined:

"In general, empathy refers to an emotional response that emanates from the emotional state of another individual, and although empathy is defined as a shared emotional response, it is contingent on cognitive as well as emotional factors." (Feshbach, 1997, p.35)

It has been agreed among researchers that empathy involves both affective and cognitive facets. The roles of the two facets vary in accordance with the situation, age and personal characteristics of the child. Feshbach (1997) has proposed a cognitive-affective model in which the empathy reaction consists of three components: a) cognitive ability to discriminate affective cues in others, b) mature cognitive skill involved in assuming the perspective and role of another person and c) emotional responsiveness in having the affective ability to experience emotions. This three-component model of empathic behavior explains the mechanisms of how an empathic child would have lower aggression and greater prosocial behavior than

the less empathic child. The ability to discriminate and label feelings of others is a prerequisite to take account of others' needs in responding to social conflicts. Advanced cognitive skills allow the examination of a conflictual situation from the perspective of the other person and would thus reduce misunderstanding. The affective component of empathy would work to inhibit aggressive behaviors. Inhibition occurs as the empathic individual observes the pain and distress inflicted in others by aggression.

Eisenberg et al. (2000) has defined empathy as the affective response that comes from one's understanding of another person's emotional state, which is similar to what the other person would or is expected to feel. One is experiencing empathy when one sees a sad person and consequently feels sad. According to Eisenberg, pure empathy is not oriented towards other. Empathy would turn into sympathy or personal distress with further cognitive processing. Sympathy arises from one's understanding of another person's emotional state, which is not the same as the other person's actual emotional state, but comprises one's sorrow or concern for the other. In experiencing sympathy, one has feelings of sorrow or concern when one sees a sad person. Personal distress is an aversive affective reaction upon oneself when apprehending the aversive emotional state of another. A person experiencing personal distress feels anxious and distressed when seeing someone who is sad. We could see from Eisenberg's definition that empathy consists of a cognitive component to apprehend the other's emotional state as well as an affective component that leads to sympathy or distress.

Studies investigating the relationship between empathy and aggression show mixed results. There are studies with findings supporting the hypothesis that empathy reduces aggressive behaviors. In examining the relationship between empathy, social intelligence and aggression with a sample of 12-years old adolescents, Bjorkqvist, Osterman and Kaukiainen (2000) found that the correlation of social intelligence to all types of aggression increased when empathy was partialed out, indicating that empathy reduced aggression. Physical aggression of early adolescents was reduced by sympathy, comprised of empathetic concern and perspective taking (Carlo, Raffaelli, Laible & Meyer, 1999). The emotional facet of empathy was also found negatively correlated to aggression and violence for college students (Mehrabian, 1997). In accordance with Feshbach's theory, Cohen and Strayer (1996) found that empathy was lower among conduct-disordered (anti-social and aggressive) youth and was related inversely to antisocial and aggressive attitudes. The subjects of the study were shown an audiovisual tape. The conduct-disordered youths had fewer concordant emotional responses to the vignette persons affectively and fewer correct identification of the vignette persons' emotion cognitively.

However, other studies do not clearly support empathy's role in reducing aggression. Borg (1998) found that self-declared bullies mainly felt sorry or indifferent after they bullied others. Amongst the bullies, girls and primary school students were significantly more likely to feel sorry for their victims than boys and secondary school students were. In examining the relationship between empathic responsiveness and aggressive behavior, Endresen and Olweus (1998) found that

there was a negative and relatively weak relationship between empathic concern and aggression for both boys and girls and across grade levels 6 to 9 (age 13-16 years old). There may be a possible but relatively weak inhibitory effect of empathic concern on aggression, as participants who scored high on empathic concern were more likely to have a negative attitude to aggression. Comparatively, the empathic distress scale had a much weaker correlation with aggressive behavior and attitudes. Results indicate that empathic concern rather than empathic distress has an inhibitory effect on aggressive behavior.

These mixed results may be due to the different roles played by the cognitive and affective facets of empathy on aggression. The affective facet may have a direct relationship with aggression, whereas having high empathy may reduce aggression. The cognitive facet on the other hand may have an indirect relationship with aggression. The cognitive abilities in detecting affective cues and taking the perspective of others may be related to one's level of social intelligence. A socially intelligent person uses one's own ability to obtain one's goal, regardless of whether the goal is socially desirable or not. The cognitive facet of empathy might then indirectly influence aggression through social intelligence. It is up to the person to select her/his own goal, socially desirable or not. It is therefore possible for one who is high in the cognitive facet of empathy to have a high level of aggression, as this is mediated by the person's social intelligence.

In the present study, it was predicted that empathy would have both direct and indirect effects on aggression. The indirect effects of empathy were hypothesized to be positively related to aggression through social intelligence, but the direct

effects were hypothesized to be negatively related to aggression. Empathy was measured as a whole in this study, and affective and cognitive empathy were not differentiated due to unavailability of appropriate measuring scales.

In a study by Espelage, Mebane and Adams (2003), females scored higher than males in empathy. The difference was greater for the affective facet of empathy than the cognitive facet of perspective taking. Both genders did not differ significantly in their reporting of relational aggression, but empathy was found to be strongly and negatively correlated with relational aggression for females only. In addition, empathy was found to inhibit both bullying and fighting for females, but only bullying for males. These findings suggest that the effects of different components of empathy on various forms of aggressive behaviors might differ between the genders. It may be that maternal empathy has a broader and more intense effect on the socialization history of girls than boys (Feshbach, Socklowskie, & Rose, 1996 as cited in Feshbach, 1997). The higher scoring on empathy for females is consistent with findings from other studies, possibly due to gender obligations or demand characteristics (Eisenberg & Lennon 1983; Hoffman, 1977; Rushton, 1976). This is particularly the case when self report measures are used. It was predicted in the present study that the levels of empathy in females would follow previous trends and also be higher than the levels of empathy in males. However, apart from the difference in mean levels, the relationship between empathy and aggression should be examined for gender effects, and thus the path model was tested for gender equivalence.

Social intelligence

The concept of social intelligence was first introduced by Thorndike (1920) as the ability to understand, manage and act wisely with human relations. There have been inconsistencies and variations in the definition of social intelligence. Some researchers have defined social intelligence with an emphasis on the cognitive ability of understanding others (Barnes & Sternberg, 1989), whilst others have focused on the behavioral aspect of effectiveness and adaptiveness in social performance (Ford & Tisak, 1983). Later, social intelligence was viewed as a multifaceted concept (Kosmitzki & John, 1993) comprising cognitive ability such as taking the perspective of others and understanding social norms. It also comprises behavioral effectiveness and adaptiveness, such as sensitivity to complicated social situations and the ability to manipulate and deal with others.

Similar concepts of social intelligence have however been derived from another line of research which describes a whole set of processes of what happens to social information received by a child and what kind of response will emerge as a result. Crick and Dodge (1994) have proposed a reformulated social information-processing (SCIP) model consisting of six different stages, where a child interprets the social cues and situations (cognitive aspect), selects the desired social goals and enacts the behavioral response (behavioral aspect).

In summary, the term "social intelligence" used in this study refers particularly to one's ability to accomplish relevant objectives in specific social settings (Ford & Tisak, 1983). An aggressor having good interpretation of social cues and selecting instrumental goals leading to aggressive behavior is not considered as deficient in

social intelligence. There are no moral values placed on the "relevant objectives" used in this definition.

In fact, social intelligence scales such as the Peer-Estimated Social Intelligence Scale (Kaukiainen, Bjorkqvist, Osterman, Lagerspetz & Forsblom, 1995) and the Tromso Social Intelligence Scale (Silvera, Martinussen & Dahl, 2001) are essentially measuring the ability to understand social cues and to enact effective behavior to accomplish what one wants in a social situation. The Peer Estimated Social Intelligence (PESI) scale measures four components of social intelligence: peer perception, social flexibility, accomplishment of one's own social goals, and behavioral outcomes. The following are examples of statements from the Peer-Estimated Social Intelligence Scale (Kaukiainen et al., 1995), *"I notice easily if others lie, I am able to persuade others to do almost anything, and I am able to get my wishes carried out"*.

The relation between social intelligence as defined here and the term "social competence" needs more explanation. Similar to social intelligence, views of social competence are diversified. Despite the conceptual differences, there is agreement that social competence entails effective social functioning (Dodge & Murphy, 1984; Hops, 1983). In a broader sense, social competence is conceived as a tri-component model, embracing social adjustment, social performance and social skills (Cavell, 1990). Under such a construct, aggressive behavior would be considered as socially incompetent, but the aggressor is not regarded as socially unintelligent.

Social intelligence and aggression. Using peer estimated scales, Kaukiainen et al. (1999) studied the relationship of aggression with social intelligence for three age groups, 10, 12 and 14 years old. It was found that for all age groups, social intelligence correlated positively and significantly with indirect aggression. However, correlation for physical and verbal aggression was insignificant. In a later study using similar scales, Bjorkqvist, Osterman & Kaukiainen (2000) found that social intelligence correlated significantly with three forms of aggression – indirect, physical and verbal, when empathy was controlled. The relationship was strongest with indirect aggression but weakest with direct aggression. They suggested that this was because more social intelligence, and therefore more social skills, was needed when the form of aggression was more sophisticated. It is inferred from these studies that the child adopting a relationally aggressive approach may be competent in social cognition to detect the social cues and contemplate the others' responses and consequences to his/her action. That the child is too self-focused and chooses goals that are destructive to relationships would not impair his/her social intelligence.

Unlike indirect aggression, direct aggression requires fewer social skills to manipulate. This is supported by the differences in social skills for direct aggression and indirect aggression found in the studies mentioned above. It was hypothesized in the present study that social intelligence is positively related to both indirect and direct aggression. However, social intelligence would have a stronger relationship with indirect aggression than direct aggression.

The Mediating Role of Social Intelligence. Current research has demonstrated a direct association of dimensions of emotional regulation, empathy and social intelligence with aggression. Emotion has been suggested by some researchers (Lemerise & Arsenio, 2000) to play a key role in affecting one's ability of processing social information and effecting social behaviors in social contexts. Emotion regulation and empathy, contributing to an individual's affect states, would in some ways modulate one's social intelligence and consequently the behavior. The aim of this study was to examine the mediating role of social intelligence on the effects of the various dimensions of emotional regulation and empathy on indirect and direct aggression.

Encoding and interpretation of social cues may be influenced by mood or emotions. The effects of happy mood could be quite different from those of a sad mood (Oatley & Jenkins, 1996). Children under calm conditions are better aware of display rules in challenging situations (Underwood, 1997). The ability to control the feelings of anger affects what is read and understood about the situation. Poor emotion regulation impairs assessment of the situation from different perspectives and prevents the adoption of a more flexible goal selection to take into account contextual factors (Saarni, 1999). Children more competent in emotion regulation are more likely to consider the situation from multiple perspectives which should facilitate a proper response (Saarni, 1999).

The evidence cited above suggests that good control of one's feeling states such as anger would positively affect one's social intelligence, which in turn positively correlates with aggression. This indirect effect of emotion regulation on aggression,

through social intelligence, is opposite to the direct effect of emotion regulation on aggression. Hence I hypothesized that social intelligence would negatively mediate the effect of emotion regulation on aggression. However, there may be variations in the extent of the mediating effects on the three dimensions of emotion regulation, and such effects will be tested separately for the three dimensions in the path model proposed.

The cognitive component of empathy is concerned with the ability to perceive and understand the other person's emotions. Similarly, social intelligence is concerned with the ability to encode and interpret social cues, of which emotion cues are a part. Lack of cognitive empathy would affect the individual's ability to encode and interpret emotion cues in a social situation. For example, misinterpretation of a provocateur's emotional cues will facilitate hostile attributions (Lemerise, Gregory, Leitner, & Hobgood, 1999 as cited in Lemerise & Arsenio, 2000). Cognitive empathy will also facilitate response enactment, as encoding and interpretation of emotion cues contribute to the provision of an ongoing source of social information concerning how one is proceeding in one's response enactment. Children deficient in reading emotion cues may resort to more rigid approaches to situations (Casey, 1996; Casey & Schlosser, 1994; Saarni, 1999). Findings cited above appear to suggest that cognitive empathy would improve an individual's social intelligence, which has been asserted by some researchers to contribute to the social skills needed to manipulate relational aggression (Bjorkqvist, Osterman & Kaukiainen, 2000).

However, empathy also plays the role of judgment in the selection and clarification of goals in a social situation. Affective empathy is about a person's ability to see things in the others' perspective and share the others' emotions and feelings. Deficits in affective empathy may increase a child's tendency to pursue self-focused goals that are destructive to relationships, as s/he does not feel the other children's pain (Cohen & Strayer, 1996). This will increase the likelihood of adopting an aggressive approach to the situations, but as explained in the previous section, this effect is not considered to impair the person's social intelligence.

In summary, social intelligence would be influenced by the cognitive facet of empathy but not the affective facet of empathy. The indirect influence of cognitive empathy through social intelligence on aggression would be opposite to the direct effect of affective empathy on aggression. We therefore hypothesize that social intelligence would partially and negatively mediate the effect of empathy on aggression. However, the present study used only one measure of empathy and measured empathy as a whole. The cognitive and affective components of empathy were not measured separately. This is due to a lack of empathy scales that could measure the different components of empathy in the literature. The closest scale in assessing the different facets of empathy is the Interpersonal Reactivity Index (Davis, 1994). However, its perspective taking scale (cognitive component) only asks the individuals about their likelihood of attempting to think in another person's perspective. The accuracy of the respondent's social insight of the other person's situation and feelings is not evaluated. Therefore, the scale does not appear to be able to test or assess perspective-taking ability or capacity. The scale

employed in the present study was the most developmentally appropriate measure found.

The Present Study

While there have been a number of studies investigating the direct effects of emotion regulation and empathy on aggression, the number of studies examining the influences of social intelligence on aggression are relatively few. Moreover, there have been no studies I know of that explore the mediating role of social intelligence in the relationship of emotion regulation and empathy to aggression, not to say a differentiation of such effects between the various components or dimensions of emotion regulation and empathy. The primary goal of the present study is therefore to investigate the mediating role of social intelligence by examining the linkage of emotion regulation dimensions (control of anger, inhibitory control, and impulsivity), empathy and social intelligence to direct aggression and indirect aggression in a path model. It is also important to examine whether gender might differentiate the effect of these predicting factors on aggression, and the model was tested for gender differences.

Understanding the impact of different facets of emotion regulation, empathy and social intelligence on the various forms of aggression, in particular in the school setting, is a critical step in the design of any intervention programs. Early identification of the causes of maladaptive behaviors is crucial to timely inhibition of serious disorders later (Crick, Casas & Ku, 1999). The present study targets children in the age range of 11-12 years. Generally, analysis of children's aggressive behavior is targeted at age groups of three developmental stages:

pre-school, middle childhood and adolescence. The age range chosen for this study falls in late middle childhood, just before adolescence. Children in middle childhood have more refined social skills, and complex cognitive and linguistics abilities. They tend to be more covert, less confrontational and use the interaction of the peer group in their relational aggression. It is not intended to test the model for children at age of 10 or below, as their relational aggression skills may not have been fully developed. At the other end of the age scale, much less research has been conducted on relational aggression of adolescents (Underwood, 2003), and there is insufficient evidence to support the hypothesizing of the current model for adolescents.

Summing up, the mediating role of social intelligence to the effects of emotion regulation dimensions and empathy on aggression was examined by testing the following hypothesized paths in the model:

Hypothesis 1 – Emotion regulation dimensions (ability to control anger, impulsivity (reversed) and inhibitory behavior) and empathy are negatively correlated with direct aggression and indirect aggression.

Hypothesis 2 – Emotion regulation dimensions (ability to control anger, impulsivity (reversed) and inhibitory behavior) and empathy are positively correlated with social intelligence.

Hypothesis 3 - Social intelligence negatively mediates the effect of emotion regulation dimensions (ability to control anger, impulsivity and inhibitory behavior) and empathy on direct aggression and indirect aggression.

CHAPTER 2. METHOD

Participants and Procedures

A sample of 344 primary six students (mean age = 11.3, S.D. = 0.6) participated in the present study. There were 151 male and 193 female participants. Data from three participants had been discarded: one due to spurious responses in circling the answers in a zigzag pattern on the questionnaire and the other two due to incomplete data on several whole sections of the questionnaire. The participants were all Hong Kong Chinese students from five different primary schools in Hong Kong. A majority of the students lived in government public housing (58%) or housing under the government's house ownership scheme (19%). Other students lived in houses without government aid, such as private housing (21.6%) and others (1.3%).

Participants were each given a questionnaire to complete in classrooms or assembly halls. They were instructed not to discuss any of the questions with neighboring students. Pre-test results indicated that the reading level of the questionnaire was appropriate for children as young as primary four. However, research staff and teachers were present in case some students needed help in reading the questionnaire. The questionnaire took around 30 minutes to complete.

Instruments

The instruments used in the study had been translated from their English versions to Chinese by a Chinese-English bilingual. For each scale, two Chinese-English bilinguals back-translated and adjusted them. Pre-tests were administered to seven children ranging from nine to twelve years of age. The

pre-tests indicated that the questionnaire was appropriate for children of this age range.

Direct and Indirect Aggression Scales (DIAS). The two forms of aggressive behavior, direct aggression (physical and verbal) and indirect aggression were assessed using a self-estimation scale (Bjorkqvist, Lagerspetz & Osterman, 1992). The scale had been used to measure aggression of children in middle childhood and had satisfactory reliability ranging from 0.60 to 0.69 for girls and 0.69 to 0.84 for boys in a previous study (Osterman, Bjorkqvist, Lagerspetz, Kaukiainen, Huesmann & Fraczek, 1994). When compared with peer-estimation, self-estimation scores of aggression were usually found to be lower and less internally consistent. However, peer and self estimated scores were significantly correlated, ranging from $r = .28$ to .41, $p < .01$. This indicates that the same individuals were considered aggressive regardless of the raters, although the amount of aggression differed due to different raters (self/peer) (Osterman et al., 1994).

In the present study, there were two direct aggression subscales, the physical aggression subscale and the verbal aggression subscale. The physical aggression subscale consisted of 7 items (e.g. hit the other one; kick the other one) and the verbal aggression subscale consisted of 5 items (e.g. yell at or argue with the other one; insult the other one). Participants were asked to rate each item on a 5-point Likert scale. The physical and verbal aggression scales were strongly correlated $r = .689$, $p < .01$. The internal consistency of the direct aggression scale in the present study was .89. The indirect aggression scale had 12 items (e.g. shut the other one out of the group; become friends with another as a kind of revenge).

Participants were asked to rate each item on a 5-point Likert scale. The internal consistency of the indirect aggression scale in the present study was .88.

Social Intelligence Questionnaire. The Peer-Estimated Social Intelligence Scale (Kaukiainen et al., 1995) was reworded for self reporting. The scale had been used to measure social intelligence in school children aged 10 to 14 (Kaukiainen et al., 1999). The scale included 10 items to assess four components of social intelligence: person perception, social flexibility, accomplishment of one's own social goals, and behavioral outcomes (e.g. I notice easily if others lie; I accommodate easily to new people and situations; I am able to persuade others to do almost anything; I am able to take advantage of others if I want to). Participants were asked to rate each item on a 5-point Likert scale. The internal consistency for the social intelligence scale in the present study was .71.

Emotion Regulation Questionnaire. Three scales measuring inhibitory control, general ability to control feelings of anger and general tendency to behave impulsively were used to assess emotion regulation.

The inhibitory control scale came from the Early Adolescent Temperament Questionnaire (EATQ-R) (Capaldi & Rothbart, 1992). It measures the capacity to plan and suppress inappropriate responses. The scale has 11 items (e.g. when someone tells me to stop doing something, it is easy for me to stop; the more I try to stop myself from doing something I shouldn't, the more likely I am to do it; it's hard for me not to open presents before I'm supposed to (reverse item)). Similar scales measuring children's inhibitory control have been used in other studies to assess emotion regulation (Eisenberg, Fabes, Bernzweig, Karbon, Poulin & Hanish, 1993;

Eisenberg, Fabes, Murphy, Maszk, Smith & Karbon, 1995; Eisenberg, Shepard, Fabes, Murphy & Guthrie, 1998; Fabes, Eisenberg, Jones, Smith, Guthrie, Poulin, Shepard & Friedman, 1999; Eisenberg, Guthrie, Farbes, Shepard, Losoya, Murphy, Jones, Poulin & Reiser, 2000) Participants were asked to respond in a self-report format on a 5-point Likert scale. The internal consistency for the inhibitory control scale in the present study was .57.

To assess the general ability to control feelings of anger, three items adapted from the State-Trait Anger Expression Inventory (Spielberger, 1991, cited in Musher-Eizenman, Boxer, Danner, Dubow, Goldstain & Heretick, 2004) were used (e.g. I can stop myself from losing my temper; I can control my angry feelings). The scale had been used in another study as a measure of emotion regulation (Musher-Eizenman et al., 2004). It was completed in a self report format on a 4-point Likert scale. The internal consistency of the 'ability to control feelings of anger' scale was .61.

The scale to measure the general tendency to behave impulsively employed three items (e.g. I start things but I have a hard time finishing them; I do things without thinking), to be completed in a self report format on a 4-point Likert scale (Bosworth & Espelage, 1995, published in Dahlberg et al., 1998, cited in Musher-Eizenman et al., 2004). It had been used in the same study mentioned above (Musher-Eizenman et al., 2004). The items of the 'tendency to behave impulsively' were reversed, in order to positively measure the ability to regulate emotions. The internal consistency of this (reversed items) 'tendency to behave impulsively' scale was .47.

Empathy Questionnaire. The Index of Empathy for Children and Adolescents (Bryant, 1982) was used. It is a self-report measure consisting of 22 items (e.g. it makes me sad to see a girl who can't find anyone to play with; people who kiss and hug in the public are silly (reverse item); I get upset when I see an animal being hurt), requiring participants to rate themselves on a 9-point Likert scale, with the rating points from -4 (very strong disagreement with the statement) to 4 (very strong agreement with the statement). The scale has been used to measure empathy in children and adolescents, and has a satisfactory reliability and validity (Bryant, 1982).

Two items, question17 and question 22, from the empathy scale were deleted. Question 17, "I get mad when I see a classmate pretending to need help from the teacher all the time" and question 22, "I don't feel upset when I see a classmate being punished by a teacher for not obeying school rules", were negatively inter-correlated with the other items on the scale. Deleting the two items improved the internal consistency of the empathy scale from .69 to .74.

CHAPTER 3. RESULTS

An overview of the results of the present study is as follows. First, the descriptive statistics of the data were reviewed. The hypotheses were then explored using correlations and partial correlations, and path models were fitted using maximum likelihood estimation. The path model fit involved the examination of the mediating role of social intelligence on indirect aggression and direct aggression, with inhibitory control, ability to control feelings of anger, (reversed items) tendency to behave impulsively and empathy as exogenous variables. The best fitting model with direct effects only was also derived to provide further evidence for mediating effects. A multi-sample analysis was run to assess whether there were differences between the two genders.

Descriptive Statistics

Table 1 displays the means and standard deviations of all the variables measured in this study. The means of inhibitory control, empathy and direct aggression were found to be significantly different between the two genders ($p < .05$). In addition, in a comparison of the means using paired t-tests, students reported that they engaged more in indirect aggression ($M = 2.05$, $SD = .78$) than in direct aggression ($M = 1.77$, $SD = .70$) [$t\ (346) = 9.99$, $p < .05$].

Both kurtosis and skewness values for each of the variables were within the -2 to 2 range, indicating that the data were normally distributed for all the variables.

Table 1

Means and Standard Deviations

	Whole Sample	Females	Males	
Scale	Mean (SD)	Mean (SD)	Mean (SD)	t-value (df)
Inhibitory control	3.22 (.52)	3.28 (.52)	3.15 (.50)	-2.190 (342)*
Ability to control feelings of anger	3.16 (.81)	3.12 (.78)	3.21 (.84)	.952(342)
Tendency to behave impulsively(reversed)	3.64 (.70)	3.69 (.68)	3.59 (.72)	-1.379(342)
Empathy	3.34 (.50)	3.28 (.54)	3.08 (.55)	-3.516(342)*
Social intelligence	3.10 (.56)	3.05 (.51)	3.15 (.61)	1.536(291)
Indirect aggression	2.05 (.78)	2.01 (.80)	2.10 (.76)	1.068(342)
Direct aggression*	1.77 (.70)	1.63 (.63)	1.95 (.75)	4.284(294)*

Note. * Indicates a significant difference in the mean values between the two genders, significant at $p < .05$

Correlations and Partial Correlations

Hypothesis 1 that emotion regulation dimensions and empathy are negatively correlated with direct aggression and indirect aggression was supported. As shown in Table 2, the different emotion regulation dimensions were all negatively correlated with aggression as well as indirect and direct aggression. Empathy

correlated negatively with indirect aggression [$r = -.151$; $p < .05$] and direct aggression [$r = -.223$; $p < .05$].

Hypothesis 2 that emotion regulation dimensions and empathy are positively correlated with social intelligence was not fully supported. The ability to control feelings of anger was significantly correlated with social intelligence [$r = .227$; $p < .05$], but the relationship of the other two dimensions of emotion regulation to social intelligence was not significant. Empathy also had a weak positive correlation with social intelligence [$r = .157$; $p < .05$].

Social intelligence was not significantly correlated with indirect aggression or direct aggression. However, when the effects of empathy and emotion regulation on the correlation were controlled, the correlation between social intelligence, and direct aggression [$r = .161$, $p < .05$] and indirect aggression [$r = .152$, $p < .05$] significantly improved (Table 3), suggesting that empathy and emotion regulation might be potential moderators. An explanation for this significant improvement is that the effect of empathy and emotion regulation dimensions on aggression reduced the effect of social intelligence on aggression. The correlation of social intelligence with aggression was positive, but the correlations of emotion regulation dimensions and empathy with aggression were negative.

Table 2

Bi-Variate Correlations between Variables Included in the Overall Model

Scale	1	2	3	4	5	6	7
1. Inhibitory control	--						
2. Ability to control feelings of anger	.325**	--					
3. Reversed tendency to behave impulsively	.419**	.220**	--				
4. Empathy	.102	.004	.128*	--			
5. Social intelligence	.049	.228**	.050	.157**	--		
6. Indirect aggression	-.372**	-.174**	-.333**	-.149**	.084	--	
7. Direct aggression	-.362**	-.156**	-.361**	-.222**	.081	.754**	--

Note. **$p<.01$; *$p<.05$; $N = 344$

Table 3

Partial Correlation (Controlling Effects of All Other Variables) between Aggression and Socio-emotional Factors (Inhibitory Control, Ability to Control Feelings of Anger, Reversed Tendency to Behave Impulsively, Empathy and Social Intelligence)

	Inhibitory control	Ability to control feelings of anger	Reversed tendency to behave impulsively	Empathy	Social intelligence
Indirect aggression	-.245**	-.080	-.198**	-.130**	.152**
Direct aggression	-.225**	-.065	-.233**	-.209**	.161**

Note. **$p<.01$

Path analysis

The path model of emotion regulation and empathy on aggression, with social intelligence as the mediator, was examined. Emotion regulation consisted of three variables, inhibitory control, ability to control feelings of anger and (reversed items) tendency to behave impulsively, while aggression was separated into two variables, direct aggression and indirect aggression.

The maximum likelihood estimation method was used to fit the path models. To begin with, a fully saturated model with paths from all exogenous variables to each endogenous variable and the exogenous mediating variable was tested. The Wald and Lagrange Multiplier tests were administered to find the best fitting model by deleting and adding model paths. Chi-square difference tests were administered

during each step of path deletion and addition, to ensure that the model fit did not significantly deteriorate from the original model.

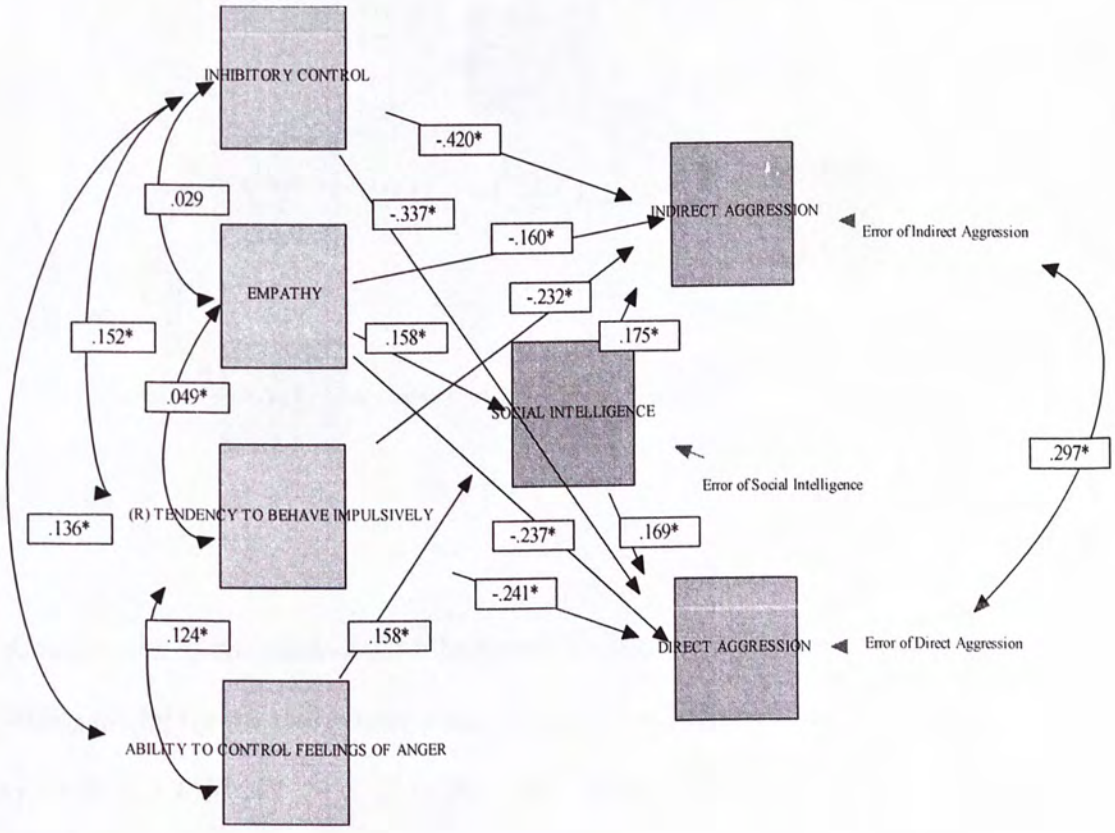
Hypothesis 3 that social intelligence negatively mediates the effect of emotion regulation dimensions and empathy on direct aggression and indirect aggression was supported. The best fitting model (Figure 2) showed an adequate fit [$X^2(5) = 2.969$, RMSEA = .000, GFI = .998, R^2 = .076 (social intelligence), .197 (indirect aggression), .226 (direct aggression)]. Effect decomposition showed that social intelligence completely mediated the effect of ability to control feelings of anger on both indirect and direct aggression. Social intelligence also partially mediated the effect of empathy on both indirect (20.3%) and direct aggression (12.8%). Social intelligence was a negative mediator, as the direct paths from empathy to both indirect and direct aggression were both negative, while its indirect paths through social intelligence to the dependent variables were positive. The other two emotion regulation dimensions, inhibitory control and (reversed items) tendency to behave impulsively were not mediated by social intelligence, as they were not correlated with social intelligence.

For comparison of mediating effects, the best fitting model with direct effects only was derived (Figure 3). This was done by allowing the emotion regulation variables and the empathy variable to predict the aggression variables directly and by setting to zero the paths from the emotion regulation variables and empathy to social intelligence. The fit of this model [$X^2(6) = 30.320$, RMSEA = .099, GFI = .976, R^2 = .209 (indirect aggression), .240 (direct aggression)] was much worse than that of the previous model. There were significant direct paths from empathy,

inhibitory control and reversed tendency to behave impulsively to direct aggression and indirect aggression. This provides additional support that social intelligence completely mediates the effect of ability to control feelings of anger but partially mediates the effects of empathy on aggression.

Figure 2

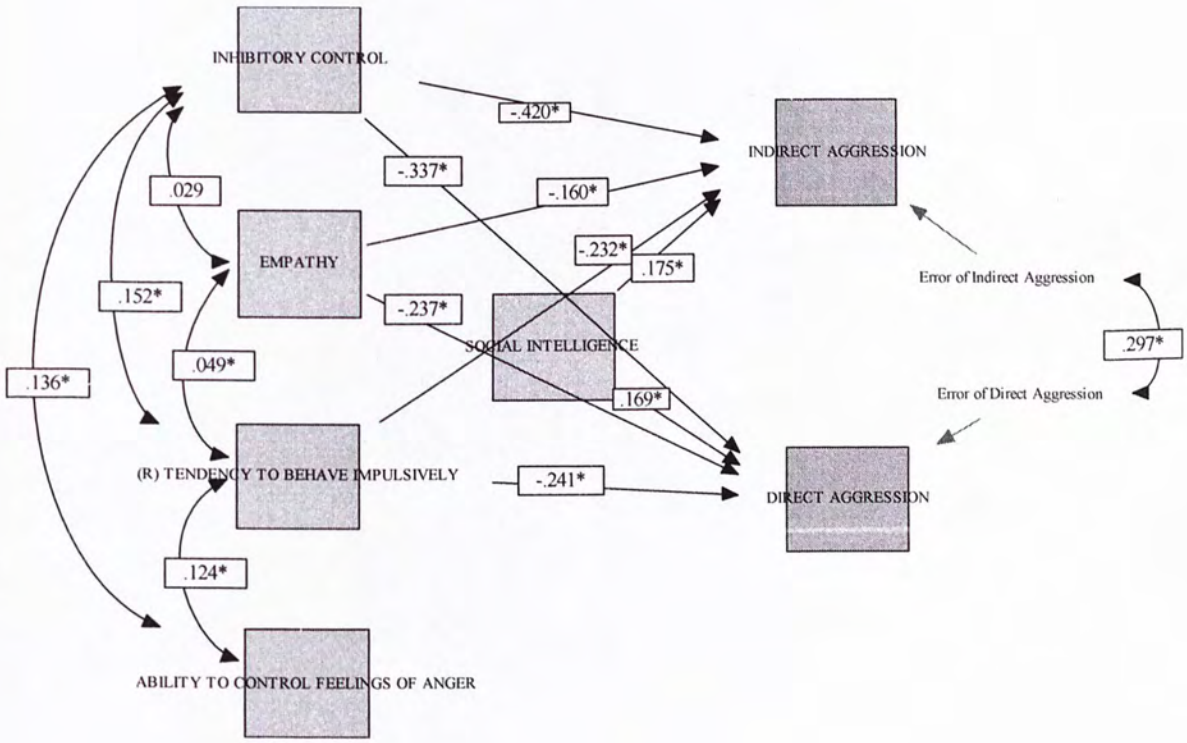
Path Model Showing Effects of Emotion Regulation Dimensions and Empathy on Indirect and Direct Aggression, with Social Intelligence as the Mediator



Note. *$p<.05$

Figure 3

Path Model Showing Direct Effects Only of Emotion Regulation Dimensions and Empathy on Indirect and Direct Aggression



Note. *p<.05

Comparison of the genders. Multi-sample analysis was employed. First, the best fitting model for the two gender groups (Figure 2) was found. Model fit was good [$X^2(10) = 8.450$, CFI = 1.0, R^2 = .100, .062 (males, females: social intelligence), .158, .234 (males, females: indirect aggression), .180, .243 (males, females: direct aggression)]. To test the equivalence of the two samples, all the regression paths were set equal [$X^2(20) = 15.977$, CFI = 1.0]. The fit of the model

was not significantly reduced [Δ *df*/ δX^2 = 10/ 7.527; $p > .05$], indicating that the two samples were not significantly different. The Lagrange Multiplier test showed that releasing any of the regression path constraints would not significantly improve the model.

CHAPTER 4. DISCUSSION

The Hypotheses

Emotion regulation variables were negatively correlated with both direct aggression and indirect aggression. This is consistent with previous research studies, which indicated more aggressive behaviors in children with problems in regulating their emotions. Empathy negatively explained both indirect aggression and direct aggression. This negative correlation concurs with the results of other studies that lower levels of empathy were associated with aggressive behaviors.

Of the three emotion regulation variables, only the ability to control feelings of anger was significantly associated with social intelligence. A socially intelligent person has the ability to accomplish her/his objectives in social situations. S/he should be able to assess situations from different perspectives and select goals flexibly and appropriately according to the contextual situation. Previous research revealed that overwhelming and poor regulation of one's state of feelings affected one's ability to select the appropriate social response (Saarni, 1999). The findings of the present study indicate that this is the case for the regulation of negative emotions, where the inability to control internal emotional state such as anger would cause one to focus excessively on one's own intense emotion and handicap the ability to think in the other person's perspective.

While emotion regulation includes the regulation of both feeling states and emotion-related behaviors, no significant relationship between emotion-related behaviors and social intelligence was found. This is consistent with previous research findings (Saarni, 1999), where a relationship between social intelligence

and regulation of feeling states only was identified. As behavior is the consequence of ability but not vice versa, it is illogical to suggest that social intelligence, which is an ability, is caused by emotion-related behaviors. This possibly explains why in this study the two dimensions concerned with regulation of emotion-related behaviors, impulsivity and inhibitory control, were not found to be related to social intelligence.

Empathy also explained social intelligence positively but weakly. This supports the view that the cognitive facet of empathy, which is concerned with the ability to perceive and understand the other person's emotion, will aid people in interpreting others' emotion, thus facilitating their responses to social situations. Essentially, this affects one's ability to encode and interpret emotion cues in a social situation, and to provide an ongoing source of social information concerning how one is proceeding in one's response enactment.

Social intelligence was found to positively explain indirect aggression and to a slightly lesser extent direct aggression, providing support to Hypothesis 3. In the present study, we do not place any moral values on behavioral enactment in our definition of social intelligence, thus allowing the possibility of aggressive children to be socially intelligent. The findings of the present study that social intelligence positively explains direct and indirect aggression support this rationale, and are consistent with the findings of a previous study that social intelligence correlated positively to all types of aggression, and that the correlation increased when empathy was controlled (Bjorkqvist, Osterman & Kaukiainen (2000). This suggests that aggression is not associated just with children who have externalizing

problem behaviors. Some children may have the ability to control or manipulate a social situation, thus having a certain degree of social intelligence to aggress towards others and achieve their goals. The findings also show a slightly stronger effect of social intelligence on indirect aggression, suggesting that higher levels of social intelligence would be needed to control social situations and relations indirectly.

Summing up, social intelligence was found to negatively and partially mediate the effects of empathy on direct and indirect aggression. The mediation effect is negative because the direct effects of empathy on direct aggression and indirect aggression are negative, but the indirect effects of empathy through social intelligence on direct aggression and indirect aggression are positive. The negative mediation means that having good empathy would directly decrease aggressive behaviors, but indirectly increase them through enhancement in social intelligence. Regarding the positive indirect effects of empathy on aggression through social intelligence, it could be explained that the cognitive facet of empathy, as related to one's ability to discriminate and label feelings of others, allows one to take account of others' needs and take advantage of them in pursuit of one's desired goals. However, the emotional facet of empathy, where one has the emotional responsiveness in having the ability to experience the feelings of others, would inhibit aggressive behaviors, thus resulting in direct but negative effects on aggression. The negative mediation explains why previous researchers did not find very strong relationships between empathy and aggression (Espelage, Mabane & Adams, 2003), as the total negative effects of empathy on aggression is reduced by its indirect positive effects.

In respect of the emotion regulation dimensions, it was found that social intelligence negatively and completely mediates effect of the ability to control feelings of anger on direct aggression and indirect aggression. It is quite likely that the ability of controlling feelings of anger, the aspect of emotion regulation concerning the regulation of one's feeling states, makes the child more socially intelligent by being calm and deliberate in taking actions for intended benefits. However, the emotion-related behavior aspects of emotion regulation, including the tendency of not behaving impulsively and the capacity to plan and suppress inappropriate responses, were not mediated by social intelligence but would directly affect the tendency of the child to adopt aggressive behaviors.

Gender

The results indicated differences in the means of inhibitory control, empathy and direct aggression between the two genders. Girls scored higher on inhibitory control and empathy, whilst boys scored higher on direct aggression. Consistent with the findings in many previous studies on empathy, girls scored significantly higher than boys did in the present study (Espelage, Mebane & Adams (2003). Also consistent with findings from previous study is the higher levels of direct aggression amongst boys. In previous studies, boys were more likely to be involved in physical aggression, and girls were more likely to be involved in indirect aggression (Morita, Soeda, Soeda & Taka, 1999). However, in the present study we did not find higher levels of indirect aggression amongst girls, but only higher levels of direct aggression amongst boys. Olweus (1999) found that boys were also commonly involved in non-physical aggression, although more

boys were involved in physical aggression than girls. Boys in the present study are in general more likely to be involved in aggressive behaviors than girls. While the scales used in this study were self reporting measures, the findings are consistent with those of previous studies.

It was not expected that any of the dimensions of emotion regulation would have a gender effect, but one of the three dimensions of emotion regulation, inhibitory control, showed a gender effect. This means girls are better than boys in having a higher capacity to plan and suppress inappropriate responses. However, girls are the same as boys in controlling their anger and not behaving impulsively. This suggests that in respect of effortful, voluntary emotion regulation, girls are more capable than boys in controlling emotional-related behaviors, such as sitting still, and not opening up presents which are not theirs, than in controlling emotions such as anger. For example, in a study with students in 3rd grade, girls showed less disappointment upon receiving a disappointing gift (McDowell, O'Neil & Park, 2000). Another factor influencing the regulation of emotional related behaviors is the socialization practices of their caretakers in their early life. Girls are socialized to show less active behavior than boys do; for example they are involved in less active play. Meanwhile, girls are the same as boys in their levels of involuntary behaviors, such as impulsivity, which is caused by a person's temperament rather than the skills to plan and suppress inappropriate responses..

The current study identified no gender differences for the hypothesized negative mediating role of social intelligence. Although mean differences in the

scores of inhibitory control, empathy and direct aggression between the genders existed, the proposed path model was equivalent for both gender samples. This means that the relationships between the socio-emotional factors and aggression are similar for both genders, despite some differences in the mean levels of some of the factors.

Culture

The present study was done on a group of Hong Kong Chinese primary six students. As findings are largely consistent with those of studies conducted primarily with Western populations, it suggests that the results may be generalized across cultures. However, it should be cautioned that even in the Western world, there are relatively few investigations conducted in the areas explored by this study. In consideration of the possible effects of cultural orientation, it is recommended that this study be repeated for other cultures.

In social psychology the Chinese people have been recognized as relatively more collectivistic, where family members are closely related. Family interdependency and parental control were found to be high in Hong Kong (Stewart, Bond, Deeds, & Chung, 1999). More rules in suppressing the outlet of anger and distress were identified in Hong Kong Chinese than in Europeans from Italy and the UK (Argyle, Henderson & Bond et al., 1986). Hong Kong Chinese were also found to be strongly influenced by the requirements of different settings. When they were asked a series of direct questions about their inner self, only 28% of the Hong Kong Chinese kept their inner self the same across the situation. This suggests that it is difficult for collectivists to describe themselves without a

particular social context (Cousins, 1989). Hong Kong Chinese adolescents were also found to have delayed expectations for autonomy, lower levels of misconduct and higher levels of distress in comparison to their American and Australian counterparts (Feldman & Rosenthal, 1994). That Chinese adolescents have more rules in suppressing anger and lower levels of misconduct is consistent with the data obtained in this study, where the mean scores of aggression are much lower than those of the emotion regulation dimensions. However, the more pronounced, direct negative effects of emotion regulation on aggression do not necessarily reduce the indirect positive effects of emotion regulation through social intelligence on aggression. It is expected that the mediating role of social intelligence would still be valid for explaining aggressive behaviors of Western adolescents.

Limitations

The coefficients and R^2 are not large, meaning that the relationship between the effects of the variables on one another is significant but not strong. The theory is verified by these significant levels with all paths running in the correct and logically deductible directions. The relatively smaller effects may be due to some other influential factors not being included in the study. For example, environmental influences may play a key role in affecting aggressive behaviors. The inclusion of more predicting variables for aggression in the regression equation should be considered.

A limitation of this study is the low reliability of the emotion regulation scales. This is particularly the case with the scale to measure impulsivity, whose internal consistency is only .47. This is possibly because there are only three items in this

scale. Although back translation was employed to ensure a correct translation of the questions, even minor discrepancies in the intent of the questions would affect the reliability of the scale when the number of items is small.

The associations between the variables identified in this study do not necessarily constitute a causal relationship, which we may need an experimental study to confirm. The design of the experiment would involve a set up to cause sequential occurrence of the processes of emotion regulation, empathy, social intelligence and aggression so that the dependency of one variable on another could be verified. On the other hand, a longitudinal study could measure the development of the children's socio-emotional skills and their subsequent involvement in aggressive behaviors.

Although anonymity was assured, there may be a slight tendency for children to give socially desirable answers, as they might want to see themselves behave in a socially desirable manner, and under this circumstance, results might be slightly biased. Another limitation of this study is that all data are self reported. In addition to self-reports, multiple assessors of aggressive behaviors, such as peers, parents and teachers would improve the accuracy and lessen socially desirable bias. Furthermore, asking about the children's behavior is not actually measuring their actual behavior or ability. Therefore, it is also suggested that future measurements of aggression should be complemented with direct observations of behaviors.

It should be noted that the study has targeted at children in the age range of 10 – 12 years. As children grow and develop emotional regulation and social skills,

the effects of these skills on aggression tendency and behaviors might change over different age ranges. Caution should be exercised if the findings are generalized for application beyond early adolescence.

It has been found in the present study that empathy has both direct and indirect relationships with aggression, but the effects due to affective and cognitive facets of empathy were not differentiated. This is due to unavailability of empathy scales to measure separately the different facets of empathy. In the literature, the closest scale to assess the different aspects of empathy is the Interpersonal Reactivity Index (Davis, 1994). However, its perspective taking scale (cognitive component) only asks about an individual's likelihood of attempting to think in another person's perspective. The accuracy of the individual's insight of the other person's feelings is not assessed. Therefore, the scale does not appear to test perspective-taking ability.

Despite these limitations, the results of this study point to a new direction of investigating the effects of socio-emotional factors on aggression – the actions and interactions of the factors should be studied in their parts as well as in a whole.

Developmental Implications

This study indicates the need and importance of addressing early children's development of emotion regulation, social intelligence and empathy in preventing aggressive behaviors. According to previous studies, the tendency towards direct and indirect aggression was detected in as early as the pre-school stage (Crick, Casas & Ku, 1999). Aggressive children would be at high risk for a broad range of negative developmental outcomes such as dropping out of school and adolescent

pregnancy (Serbin, Cooperman, Peters, Lehoux, Stack & Schwartzmen, 1998). In a review of studies by Parker and Asher (1987), aggressiveness was also found to be associated with dropping out of school and criminality. It can be inferred from the results of this study that without affective empathy, the ability to control anger and manage social situations would not necessarily reduce aggression. In fact these children would grow and develop their skills of aggression towards their peers when they become more socially intelligent. It is important to educate and train children early in all of these three socio-emotional factors as well as in moral principles and conscience development. The children have to be socialized in a way that develops simultaneously their socio-emotional ability and sense of conscience. Teachers and parents should behave as role models, while the media should be prudent and controlled in the dissemination of messages and scenes of atrocity and aggression. This is to train and develop children to know what and how they are supposed to respond in situations of challenges and conflict.

Clinical Implications

The study results suggest that we should avoid a generic approach in the design of intervention programs to reduce aggression. There is a need to diagnose for the forms and causes of aggressive behaviors, in particular the socio-emotional factors which this study and others have revealed a significant influence on aggression. For children whose aggressiveness is primarily associated with deficits in empathy, emotion regulation or social intelligence, training directed towards the development of empathy, emotion regulation and social skills is needed. For aggressive children strong in cognitive empathy, emotion regulation or social intelligence but weak in

affective empathy, they have to be educated more on moral values and essence of conscience. All these requirements suggest that the diagnosis of the underlying causes of aggression would not be a straight forward and simple task. It requires the development of sophisticated scales and methods, not just to assess the children's overall ability in emotion regulation, empathy and social intelligence, but also to analyze their strengths and weaknesses in respect of the various components and facets of these socio-emotional factors.

Future Directions

While there have been studies which detected negative but weak correlations of emotion regulation dimensions and empathy to aggression, there have been no studies to unveil the positive but indirect effects of these factors on aggression. The findings of this study that social intelligence negatively mediates the effects of empathy and emotion regulation dimensions on aggression are instrumental in enhancing our understanding of the causal factors of aggressive behaviors. They indicate that a) emotion regulation and empathy are complex socio-emotional factors, each of which consists of components bearing different effects on aggression; b) certain dimension of emotion regulation and empathy predict social intelligence positively; and c) social intelligence predicts aggression positively.

Future studies should continue to examine the distinct effects of the various components of emotion regulation and empathy. It is suggested that appropriate scales be developed to measure the cognitive and affective aspects of empathy distinctively so that their respective effects on aggression can be controlled and analyzed.

On the other hand, the influences of the various emotion regulation dimensions should be further investigated and differentiated with respect to the different forms and dimensions of aggression - direct and indirect aggression, as well as proactive and reactive aggression. This is because proactive aggression would involve planning, plotting and manipulation of situations, thus requiring higher social skills, whereas reactive aggression on the contrary is more of a defensive nature, being subject to the ability of controlling one's emotion or emotion-related behaviors.

Most of the studies on aggressive behaviors focus on early or middle childhood. There are relatively few research studies on causes and effects of adolescents' aggression problems, possibly because of greater variations and complexity of the influences of the socio-emotional factors at this developmental stage. The present study took the first step in exploring the mediating role of social intelligence on the effect of empathy and emotion regulation on aggression for children in late middle childhood/early adolescence. More research studies and investigations in this direction are also needed for children approaching adulthood.

Literature review indicates that research on child aggression have in many cases been directed to serve local needs of designing an appropriate intervention program to address specific issues in a school setting. The studies have been performed mostly for children from North America and the Scandinavian countries. The present study contributes to the body of knowledge about Hong Kong children's aggressive behaviors. It is recommended that more studies of this type are carried out for children of other cultures.

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